

Amendments to the Claims:

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1. (Currently amended) A method of communicating data between a transmitter having a plurality of antennas and at least one remote receiver, the method comprising the steps of:
  - phase shifting a plurality of data communication signals from a respective plurality of channels to generate derived versions of each data communication signal, each derived version of each data communication signal having a respective signal phase shift;
  - transmitting the derived versions of each data communication signal to respective antennas within the plurality of antennas;
  - providing a distinct delay associated with each derived version of each data communication signal and its respective antenna; and
  - altering the distinct delay associated with a derived version of a data communication signal in response to a change of an estimated delay profile of a delay between multipath signals associated with a channel of the plurality of channels.
2. (Previously amended) The method according to claim 1 further comprising the step of receiving at the transmitter, data communication uplink signals from each remote receiver in communication with the transmitter and estimating a delay profile associated with each received uplink signal.
3. (Previously amended) The method according to claim 2 further comprising the step of determining a distinct communication signal delay associated with each channel of the plurality of channels, wherein each communication signal delay is derived from data associated with the respective uplink signal.
4. (Previously amended) The method according to claim 1 further comprising the step of amplitude scaling the plurality of data communication signals such that each derived version of each data communication signal will further have a respective signal amplitude.

5. (Cancelled)

6. (Previously amended) The method according to claim 1 wherein the derived versions of a data communication signal transmitted to each antenna are associated with a code division multiple access (CDMA) data signal.

7. (Previously amended) The method according to claim 1 wherein the derived versions of a data communication signal transmitted to each antenna are associated with a time division multiple access (TDMA) data signal.

8. (Currently amended) A method for communicating data between a transmitter having a plurality of antennas and at least one remote receiver, the method comprising the steps of:

receiving at the transmitter, data communication uplink signals from each remote receiver in communication with the transmitter and estimating a delay profile of a delay between multipath signals associated with each received uplink signal;

determining a distinct communication signal delay associated with each communication channel within a plurality of communication channels, wherein each communication channel signal delay is derived from the estimated delay profile of data associated with the respective uplink signal;

transmitting from the transmitter, a communication signal via each communication channel to each antenna within the plurality of antennas;

providing a distinct delay associated with each communication channel and its respective antenna;

measuring channel information between the transmitter and the plurality of antennas, the channel information selected from the group consisting of signal amplitude, signal phase and signal delay;

determining a desired communication signal phase shift associated with each communication channel from the measured channel information; and

selectively phase shifting communication signals produced at the transmitter to generate derived versions of channel communication signals, each derived version of the channel communication signals having its desired communication signal phase shift.

9. (Previously amended) The method according to claim 8 further comprising the step of altering the distinct delay associated with a channel communication signal and its respective antenna if and when the estimated delay profile associated with the specific channel communication signal changes from a prior estimated delay profile.
10. (Previously amended) The method according to claim 8 wherein the step of receiving at the transmitter, a communication uplink signal from each remote receiver in communication with the transmitter and estimating a delay profile associated with each received uplink signal comprises the step of receiving a time division multiple access (TDMA) data signal.
11. (Previously amended) The method according to claim 8 wherein the step of receiving at the transmitter, a communication uplink signal from each remote receiver in communication with the transmitter and estimating a delay profile associated with each received uplink signal comprises the step of receiving a code division multiple access (CDMA) data signal.
12. (Previously amended) A communication system comprising:
  - a transmitter having a plurality of spaced apart antennas;
  - a channel measurement circuit coupled to the plurality of spaced apart antennas and arranged to produce a delay profile estimate of a delay between multipath signals from a remote transmitter;
  - a channel input terminal coupled to receive a data communication signal; and
  - a delay circuit operatively coupled between the channel input terminal and the plurality of spaced apart antennas providing a distinct delay in the data communication signal in response to the delay profile estimate.

13. (Previously amended) The communication system according to claim 12 wherein the data communication signal is associated with a code division multiple access (CDMA) data signal.
14. (Previously amended) The communication system according to claim 12 wherein the data communication signal is associated with a time division multiple access (TDMA) data signal.
15. (Previously amended) The communication system according to claim 12 wherein the channel measurement circuit is configured to phase shift the data communication signal.
16. (Previously amended) The communication system according to claim 15 wherein the channel measurement circuit is further configured to amplitude scale the data communication signal.
17. (Previously amended) The communication system according to claim 12 wherein the channel measurement circuit is configured to amplitude scale the data communication signal.
18. (Previously amended) A data communication system comprising:
  - a transmitter having a plurality of spaced apart antennas suitable for communication with at least one remote transceiver;
  - an element providing a derived version of each communication signal transmitted from a transmitter channel to the plurality of spaced apart antennas; and
  - a delay element providing a distinct delay associated with each antenna and configured to alter the distinct delay in response to a change of a delay between multipath signals from the at least one remote transceiver.
19. (Previously amended) The data communication system according to claim 18 wherein the delay element provides the distinct delay to a code division multiple access (CDMA) communication signal.

20. (Previously amended) The data communication system according to claim 18 wherein the delay element provides the distinct delay to a time division multiple access (TDMA) communication signal coupled between the transmitter and the plurality of spaced apart antennas can be demodulated within the at least one remote transceiver.

21. (Previously amended) The data communication system according to claim 18 wherein the element providing a derived version of each communication signal is configured to phase shift a communication signal transmitted from a transmitter channel to the plurality of spaced apart antennas.

22. (Previously amended) The data communication system according to claim 18 wherein the element providing a derived version of each communication signal is further configured to amplitude scale a communication signal transmitted from a transmitter channel to the plurality of spaced apart antennas.

23-27. (Cancelled)

28. (Currently amended) A data communication system comprising:  
a transmitter configured to communicate with at least one remote receiver, the transmitter having a plurality of spaced apart antennas and further having:  
a data processor;  
a data input device in communication with the data processor;  
an algorithmic software directing the data processor; and  
a data storage unit, wherein discrete channel measurement data and discrete communication signal uplink data associated with at least one remote receiver in communication with the transmitter is stored and supplied to the data processor such that the data processor, directed by the algorithmic software, can automatically derive communication signal parameters using algorithmically defined relationships associated with the discrete channel measurement data such that derived communication signals communicated between the transmitter and each

respective antenna will be characterized by at least one distinct signal parameter selected from the group consisting of signal phase and signal amplitude; and further wherein the data processor is further directed by the algorithmic software such that it can automatically determine signal delay profile parameters of a delay between multipath signals using algorithmically defined relationships associated with discrete communication signal uplink data such that a signal communicated between the transmitter and each antenna will be characterized by a distinct signal delay.

29. (Original) The data communication system according to claim 28 further comprising at least one remote receiver.

30. (Original) The data communication system according to claim 29 wherein the at least one remote receiver is configured to demodulate a time division multiple access (TDMA) signal generated by the transmitter.

31. (Original) The data communication system according to claim 29 wherein the at least one remote receiver is configured to demodulate a code division multiple access (CDMA) signal generated by the transmitter.

32. (Currently amended) A communication system in which system users communicate information signals through a transmitter, the transmitter having an antenna system comprising:  
a plurality of spaced apart antennas;  
signal distributing means for coupling communication signals between a transmitter and the plurality of spaced apart antennas;  
signal deriving means operatively coupled to the signal distributing means for providing communication signal phase parameters associated with communication signals, wherein the phase parameters are determined from channel measurement information associated with the signal distributing means; and

variable delaying means operatively coupled to the plurality of spaced apart antennas and the signal distribution means for providing discrete delays associated with delay profile estimates of a delay between multipath signals of the communication signals and the plurality of spaced apart antennas.

33. (Previously amended) The communication system according to claim 32 wherein the variable delaying means comprises:

a data processor;

an algorithmic software directing the data processor; and

a data storage unit, wherein discrete signal uplink data associated with at least one mobile terminal in communication with the transmitter is stored and supplied to the data processor such that the data processor, directed by the algorithmic software, can automatically determine signal delay profile parameters using algorithmically defined relationships associated with the discrete signal uplink data such that a signal communicated between the transmitter and each antenna will be characterized by a signal delay distinct to each antenna.

34. (Previously amended) The communication system according to claim 33 wherein the algorithmic software is configured to further direct the data processor such that the data processor can determine new signal delay profile parameters to re-characterize the signal delay distinct to each antenna when the discrete signal uplink data received by the transmitter are sufficiently changed to require that a distinct signal delay change by at least one chip from an existing distinct signal delay.

35. (Original) The communication system according to claim 32 wherein the communication signals are associated with code division multiple access (CDMA) data.

36. (Original) The communication system according to claim 32 wherein the communication signals are associated with time division multiple access (TDMA) data.

37. (Currently amended) A method of communicating data between a transmitter having a plurality of antennas and at least one remote receiver, the method comprising the steps of:  
selectively amplitude scaling data communication signals produced at the transmitter to generate derived versions of the data communication signals, each derived version of the data communication signals having a respective signal amplitude;  
transmitting from the transmitter, derived versions of each data communication signal to each antenna within the plurality of antennas;  
providing a distinct delay associated with each derived version of the data communication signal and its respective antenna; and  
altering the distinct delay associated with a derived version of the data communication signal and its respective antenna if and when an estimated delay profile of a delay between multipath signals associated with a communication channel changes from a prior estimated path profile.

38. (Previously amended) The method according to claim 37 further comprising the step of selectively phase shifting data communication signals produced at the transmitter such that each derived version of the data communication signals will further have a respective signal phase shift.

39. (Cancelled)

40. (Previously amended) The method according to claim 37 wherein the derived versions of a data communication signal transmitted to each antenna are associated with a code division multiple access (CDMA) data signal.

41. (Previously amended) The method according to claim 37 wherein the derived versions of a data communication signal transmitted to each antenna are associated with a time division multiple access (TDMA) data signal.

42. (Currently amended) A data communication system comprising:  
a transmitter having a plurality of spaced apart antennas suitable for communication with at least one remote receiver;  
a phase shifting element providing a derived version of a communication signal transmitted from a transmitter channel to the plurality of spaced apart antennas, wherein the phase shifting element is configured to phase shift the communication signal; and  
a delay element providing a distinct delay associated with each antenna in response to a delay profile estimate of a delay between multipath signals of a signal from the at least one remote receiver.
43. (Previously amended) The data communication system according to claim 42 wherein the delay element provides the distinct delay to a code division multiple access (CDMA) communication signal.
44. (Previously amended) The data communication system according to claim 42 wherein the delay element provides the distinct delay to a time division multiple access (TDMA) communication signal.
45. (Currently amended) A data communication system comprising:  
a transmitter having a plurality of spaced apart antennas suitable for communication with at least one remote receiver;  
a multiplier element providing a derived version of a communication signal transmitted from a transmitter channel to the plurality of spaced apart antennas, wherein the multiplier element is configured to amplitude scale the communication signal; and  
a delay element providing a distinct delay associated with each antenna in response to a delay profile estimate of a delay between multipath signals of a signal from the at least one remote receiver.

46. (Previously amended) The data communication system according to claim 45 wherein the delay element provides the distinct delay to a code division multiple access (CDMA) communication signal.
47. (Previously amended) The data communication system according to claim 45 wherein the delay element provides the distinct delay to a time division multiple access (TDMA) communication signal.